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Attorney Docket No. 3275.06US03

APPEAL BRIEF TRANSMITTAL

In re the application of:

	Horne et al.	Confirmation No.: 1933
Application No.:	10/822,642	Examiner: Hoffmann, J.
Filed:	April 12, 2004	Group Art Unit: 1791
For:	METHOD FOR FROMING OPTICAL FIBER PERFORMS	

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

An Appeal Brief is enclosed for the above-identified application, with respect to the Notice of Appeal filed on May 5, 2008.

[X] Applicant(s) is/are entitled to small entity status in accordance with 37 CFR 1.27.

[X] A check in the amount of [ ] $505.00 (large entity) [X] $255.00 (small entity) to cover the filing fee.

Respectfully submitted,

Peter S. Dardi

Peter S. Dardi, Ph.D.
Registration No. 39,650

Please grant any extension of time necessary for entry; charge any fee due to Deposit Account No. 50-3863.

CERTIFICATE OF MAILING

I hereby certify that this document is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on

July 7, 2008
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Peter S. Dardi

Peter S. Dardi, Ph.D.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of:	Attorney Docket No.: 3275.06US03
Horne et al.	Confirmation No.: 1933
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

BRIEF FOR APPELLANT

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In re the application of: Attorney Docket No.: 3275.06US03

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APPEAL BRIEF

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Sir:

INTRODUCTORY COMMENTS

This is an appeal from an Office Action dated February 5, 2008, in which claims 20, 25, 26, 31-39, 41 and 43-48 were finally rejected. The rejection of claims 20, 25, 26, 31-39, 41 and 43-48 are hereby appealed. A Notice of Appeal was filed on May 5, 2008.

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July 7, 2008 Peter S. Dardi
Date of Deposit Peter S. Dardi, Ph.D.

REAL PARTY IN INTEREST

NeoPhotonics Corp. has acquired the entire right, title, and interest in and to the invention, the application, and any and all patents to be obtained therefore. The assignment from the inventors to NeoPhotonics Corporation is recorded at reel/frame 014395/0720. The interests of Neophotonics Corp. were assigned to NanoGram Corp. by an assignment recorded at reel/frame 013957/0076. Title was assigned back to NeoPhotonics Corp. in an assignment, and the confirmation of this assignment was recorded at reel/frame 018942/0067.

RELATED APPEALS AND INTERFERENCES

None.

STATUS OF CLAIMS

Claims 20, 25, 26, 31-39, 41 and 43-48 are pending. Claims 1-19, 21-24, 27-30, 40 and 42 have been cancelled. Claims 20, 25, 26, 31-39, 41 and 43-48 stand rejected, and the rejection of claims 20, 25, 26, 31-39, 41 and 43-48 is hereby appealed. The pending claims are listed in the Claims Appendix.

STATUS OF AMENDMENTS

No claims have been amended after final rejection. A Notice of Appeal was filed on May 5, 2008 after filing a response to the Final Office Action on April 3, 2008.

SUMMARY OF CLAIMED SUBJECT MATTER

The invention relates to method for the formation of optical fiber preforms. To provide functionality to the resulting optical fiber, optical fiber preforms have a distribution of composition,

which can be reflected in the composition of a host glass material and/or dopant composition. (Specification, hereinafter Spec., at page 5, line 23 to page 6, line 3) A fundamental aspect of the invention involves the formation of a coated glass rod in which the coating forms the basis for the introduction of dopants into the preform structure. (Claims 20 and 31; Spec. at Fig. 30 and page 11, lines 12-22.) The coated rod having the doped coating is placed into a glass preform structure such that the coated rod becomes at least a portion of the core of the resulting structure. (Spec. at page 5, lines 15-22 and page 10, lines 10-20.)

The coating has selected characteristics to impart desired functionality and properties. The coating comprises SiO_2 with a rare earth element and a non-rare earth dopant. (Claim 20). The specification describes dopant and host glass compositions. (Spec. at page 23, line 25 to page 28, line 2.) The coating is formed such that it has primary particles embedded within the coating structure with primary particle sizes no more than about 500 nm. (Claim 20, Spec. at page 56, lines 10-16). The density of the coating is from about 0.02 to about 0.55 of the fully densified mass density for the material of the coating material, which is consistent with formation of the coating using light reactive deposition, which is discussed further below. (Claims 20 and 31; Spec. at page 60, line 25 to page 61, line 5)

As specified in claims 20 and 31, the coating and core structure have different dopant compositions. (Spec. at page 5, lines 18-22 and page 10, line 17-20.). Once the insert is placed within the glass preform structure, the resulting optical fiber preform has a composition that changes at least between the coating and core. In general, the dopant composition of the glass preform structure would also be different so that the ultimate optical fiber pulled from the preform has a core and cladding with different indices of refraction.

Light reactive deposition is described in the specification with respect to Figs. and at page 48, line 23 to page 55, line 30. Claim 31 specifies the formation of the coating using light reactive deposition in which a flowing reaction deposition is performed with light driving the reaction. Light

reactive deposition provides the capability of depositing a coating at a relatively high deposition rate with the ability to adjust the composition, such as the dopant elements and dopant concentrations, over a very wide range based on vapor/gaseous and/or aerosol reactants. In its general use, light reactive deposition produces coatings with a density with a factor from about 0.2 to about 0.55 relative to the full density of the coating material. (Claims 20 and 31; Spec. at page 60, line 25 to page 61, line 5.) Light reactive deposition differs fundamentally from laser assisted Chemical Vapor Deposition (CVD) in that light reactive deposition does not involve irradiating the substrate with the laser/light beam. In particular, light reactive deposition involves aiming a light beam to avoid the substrate such that the reaction takes place away from the substrate. (Claim 31, Spec. at page 42, lines 1-14 and page 51, lines 6-18.) This separate reaction provides great flexibility with respect to product composition while yielding the lower density coatings specified in the claims.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. The rejection of claims 20, 25-26, 39, 41 and 43-48 under 35 U.S.C. § 112, second paragraph for alleged indefiniteness for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. The rejection of claims 20, 25-26, 39, 41 and 43-48 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,749,396 to Hicks, Jr. (Hicks) in view of U.S. Patent 4,501,602 to Miller et al. (Miller), U.S. Patent 4,684,384 to Berkey (Berkey) and U.S. Patent 3,957,474 to Kobayashi et al. (Kobayashi).

3. The rejection of claims 31-38, 43 and 48 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 4,749,396 to Hicks, Jr. (Hicks) in view of U.S. Patent 4,501,602 to Miller et al.

(Miller), U.S. Patent 4,684,384 to Berkey (Berkey), U.S. Patent 3,957,474 to Kobayashi et al. (Kobayashi) and U.S. Patent 5,958,348 to Bi et al. (Bi).

Copies of the cited references are found in the Evidence Appendix. These references are of record in the application since they are cited in the pending rejections.

ARGUMENT

GROUPING OF CLAIMS

Appellant argues the claims as five groups as follows.

1. Group 1 includes claims 20-26, 39 and 44-48 directed to a method for forming an optical fiber preform comprising an inserting step.

2. Group 2 includes claims 31-38 directed to a method for forming an optical fiber preform comprising forming an insert using a reactive deposition and inserting the insert into a glass preform structure.

3. Group 3 has claim 39 directed to a method for forming an optical fiber preform with specific compositions comprising an inserting step and a further step of coating the insert in a flowing reactor.

4. Group 4 has claim 41 directed to a method for forming an optical fiber preform with specific compositions comprising an inserting step with a coated insert having a density within a specific range.

5. Group 5 has claim 43 directed to a method for forming an optical fiber preform with an insert coated in a reactive deposition process and having a coating density within a specific range.

LEGAL AUTHORITY

The Court of Appeals for the Federal Circuit has exclusive appellate jurisdiction for cases arising under the patent law under 28 U.S.C. § 1295 (a)(1). Principles of patent law established by the Federal Circuit are subject to review by the U.S. Supreme Court, and the Supreme Court occasionally rules on patent cases that provide ultimate authority for interpreting the patent statutes. The Federal Circuit has adopted as binding precedent all holdings of its predecessor courts, the U.S. Court of Claims, and the U.S. Court of Customs and Patent Appeals. South Corp. v. U.S., 215 USPQ 657 (Fed. Cir. 1982). Therefore, unless they have been overruled en banc, CCPA cases are binding precedent for the present appeal.

A. INDEFINITENESS

The patent statute at 35 U.S.C. § 112, second paragraph, requires that the "specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention." "Indefiniteness is also a legal determination arising out of the court's performance of its duty construing the claims, and is reviewed *de novo*." BJ Services Co. v. Halliburton Energy Services, Inc., 338 F.3d 1368, 1372 (Fed. Cir. 2003); rehearing and rehearing *en banc* denied October 17, 2003. "Whether a claim is invalid for indefiniteness requires a determination whether those skilled in the art would understand what is claimed when the claim is read in light of the specification." Morton International Inc. v. Cardinal Chemical Co., 28 USPQ2d 1190, 1194 (Fed. Cir. 1993).

"Definiteness problems often arise when words of degree are used in a claim. That some claim language may not be precise, however, does not automatically render a claim invalid." Seattle Box Co. v. Indus. Crating & Packing, Inc., 731 F.2d 818m, 826 (Fed. Cir. 1984). "The question becomes whether one of ordinary skill in the art would understand what is claimed when the claim is read in light of the specification." BJ Services Co., at 338 F.3d 1372.

B. LEGAL BACKGROUND - OBVIOUSNESS

1. The Examiner Bears The Burden Of Demonstrating Obviousness.

The Examiner has the burden of persuasion in showing that the Appellant is not entitled to a patent. "[T]he conclusion of obviousness vel non is based on the preponderance of evidence and argument in the record." In re Oetiker, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992). The patent office has the ultimate burden of persuasion in establishing that an applicant is not entitled to a patent. Id. at 1447, concurring opinion of Judge Plager. **"The only determinative issue is whether the record as a whole supports the legal conclusion that the invention would have been obvious."** Id. (emphasis added).

"In rejecting claims under 35 U.S.C. §103, the examiner bears the initial burden of presenting a prima facie case of obviousness." In re Rijckaert, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). Prima facie obviousness is not established if all the elements of the rejected claim are not disclosed or suggested in the cited art. In re Ochiai, 37 USPQ 1127, 1131 (Fed. Cir. 1995). "The test for obviousness *vel non* is statutory. It requires that one compare the claim's 'subject matter as a whole' with the prior art 'to which said subject matter pertains.'"). **"It is impermissible, however, to simply engage in a hindsight reconstruction of the claimed invention, using applicant's structure as a template and selecting elements from references to fill the gaps."** In re Gorman, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991)(emphasis added).

If the Examiner fails to establish a prima facie case of obviousness, the obviousness rejection must be withdrawn as a matter of law. In re Ochiai, 37 USPQ at 1131 ("**When the references cited by the examiner fail to establish a prima facie case of obviousness, the rejection is improper and will be overturned.**" Emphasis added.).

To establish a *prima facie* case of obviousness, an examiner must meet three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the teachings of a reference or to combine the teachings of multiple references. Second, there must be a reasonable expectation of success in performing the modification or combination. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations, although a clarification of this issue has been recently provided by the Supreme Court in their *KSR* opinion, as described below. The teaching or suggestion to make the claimed combination and reasonable expectation of success must both be found in the prior art, and not based only on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

2. Differences Between The Scope Of The Prior Art And The Claimed Invention Must Be Evaluated

The two initial factual determinations under a Graham analysis of obviousness mandated by the Supreme Court are (A) Determining the scope and content of the prior art and (B) Ascertaining the differences between the prior art and the claims at issue. Graham v. John Deere, 383 U.S. 1, 148 USPQ 459 (1966). The "factors [recited in Graham] continue to define the inquiry that controls." KSR Int'l Co. v. Teleflex Inc., 127 S.Ct. 1727, 1734. In evaluating the differences between the prior art and the claimed invention, the invention as a whole must be considered. Stratoflex, Inc. v. Aeroquip Corp. 218 USPQ 871 (Fed. Cir. 1983). Similarly, a prior art reference must be considered "as a whole, including portions that would lead away from

the claimed invention." W. L. Gore & Associates, Inc. v. Garlock, Inc., 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984). Under Graham, the evaluation of the teachings is performed from the perspective of a person of ordinary skill in the art. "A person of ordinary skill is also a person of ordinary creativity, not an automaton." KRS Int'l Co., 127 S.Ct. at 1742.

3. There Must Be Teaching or Suggestion In The Art To Modify The Teachings Of the Cited References

The Supreme Court has recently clarified that the examination of the teachings of the prior art should not be performed rigidly. Specifically, "a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions." KSR Int'l Co., 127 S.Ct. at 1731. "Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person of ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." Id. The Court noted that "it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." Id. "Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." Id.

4. The References Must Teach Or Suggest All Of The Claim Elements

Prima facie obviousness is not established if all the elements of the rejected claim are not disclosed or suggested in the cited art. In re Ochiai, 37 USPQ 1127, 1131 (Fed. Cir. 1995). ("The test for obviousness *vel non* is statutory. It requires that one compare the claim's 'subject matter as a whole' with the prior art 'to which said subject matter pertains.'"). See also, In re Royka, 180 USPQ 580 (CCPA 1974).

5. The References Must Provide A Reasonable Expectation Of Success

While a reference is prior art for all that it teaches, references along with the knowledge of a person of ordinary skill in the art must be enabling to place the invention in the hands of the public. In re Paulsen, 31 USPQ2d 1671, 1675 (Fed. Cir. 1994). See also In re Donohue, 226 USPQ 619, 621 (Fed. Cir. 1985). "The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood success, viewed in light of the prior art." Micro Chemical Inc. v. Great Plains Chemical Co., 41 USPQ2d 1238, 1245 (Fed. Cir. 1997)(quoting In Re Dow Chemical Co., 5 USPQ2d 1529, 1531 (Fed. Cir. 1988)).

ANALYSIS - REJECTION UNDER SECTION 112, SECOND PARAGRAPH

The Examiner rejected claims 20, 25-26, 39, 41 and 44-48 under 35 U.S.C. § 112, second paragraph as indefinite. Appellant requests reconsideration of this rejection. Appellant maintains that the Examiner has failed to establish *prima facie* indefiniteness, and Appellant has provided ample rebuttal arguments with respect to the Examiner's position. As stated on page 2 of the final Office Action, the Examiner objected to the phrase "dopant compositions" in the last two lines of claim 20 and to the density range description in claims 41 and 43. These two issues are discussed sequentially.

With respect to claim 20, the Examiner noted that line 5 of claim 20 refers to the composition of a dopant within a coating on an insert. Specifically, the claim indicates that the insert coating has an oxide composition with a dopant comprising a metal element. The claim further indicates that the coating is over a core structure, which is described as a glass rod. The last wherein clause of the claim specifies that "the coating and the core structure have different dopant compositions." The plain meaning of this wherein clause seems very clear, and this is no apparent reason that its meaning would not be understood by a person of ordinary skill in the art. A person of ordinary skill in the art would have an understanding of glass materials as they are used in the telecommunications industry.

The office action at page 2, further indicates that one "would not be able to reasonably ascertain if the claimed "compositions" are in addition to those of line 5, or if they merely further describe them." But the wherein clause does not specify any compositions since it only describes differences between compositions. Since the clause does not describe any compositions, it is not reasonable to argue that they are in addition to the compositions of line 5. The clause clearly indicates a relationship of compositions that is perfectly consistent with the remaining description of the claim. Thus, the claim language is clear, and a person of ordinary skill in the art would have no difficulty whatsoever in ascertaining the meaning of the language.

With respect to the ranges of claims 41 and 43, the office action on page 2 states that it is "unclear if the density of claim [sic] 41 and 43 is supposed to be interpreted as being a value "between" 0.05 and 0.40, or if the literal meaning that it goes "from" 0.05 to 0.40 (i.e. it starts out as 0.05 and then reaches 0.40.)" With all due respect, the plain meaning of the language does not quite yield either of these perspectives. The plain reading of a range of factors does not go anywhere. A range of factors clearly does not relate to positions. And the plain reading of the claim language in isolation or in view of the specification does not implicate any temporal change. A person of ordinary skill in the art would have not difficulty in unambiguously

interpreting the language to mean the values of the factor between about 0.05 and about 0.40 inclusive of the end points. Appellant attaches in the Evidence appendix pages from Webster's dictionary with the relevant definition indicating that from indicates the starting point of a parameter. With all due respect, a person of ordinary skill in the art would presume to be reasonably proficient in the English language, and it is clear that a person of ordinary skill in the art would perfectly understand the meaning of the language at issue.

In summary, Appellant strenuously maintains that a person of ordinary skill in the art would very clearly understand the meaning of the claim language.

ANALYSIS - REJECTION UNDER SECTION 103(A)

A. The Examiner rejected claims 20, 25, 26, 39, 41 and 44-48 under 35 U.S.C. § 103(a) as being unpatentable over Hicks in view of Miller, Berkey and Kobayashi. With all due respect, Appellant asserts that claims 20, 25, 26, 39, 41, and 44-48 are clearly not *prima facie* obvious over Hicks in view of Miller, Berkey, and Kobayashi, and the Examiner has failed to meet his burden of establishing unpatentability by a preponderance of the evidence..

All of the references Hicks, Miller, Berkey, and Kobayashi alone or combined fail to disclose the features of the claimed invention, including for example, "the coating having an average density that is a factor within the range from about 0.02 to about 0.55 of the fully densified mass density," "the coating comprises particles having an average primary particle diameter of no more than about 500 nm," and "the coating and the core structure have different dopant compositions," as recited in independent claim 20.

Hicks is directed to a very general method of forming an optical fiber perform without disclosing any specifics as to the characteristics of the perform resulting from the process, for example, the average density of the coating and the average primary particle diameter of the coating. None of the other references addresses these features. Specifically, Examiner cited

Miller for the alleged use of rare earth and non-rare earth elements and Berkey and Kobayashi for the alleged use of lasers.

Regarding the feature "the coating and the core structure have different dopant compositions," Hicks teaches an optical fiber preform that following the joining of the rod with the tube-like member has a "relatively sharp step in index of refraction between the core and cladding of the resulting fiber." See column 4, lines 36-40. This implies that the composition of the rod and the coating are the same such that they have the same index of refraction after consolidation. Furthermore, there is simply no teaching in Hicks to suggest a coating over a glass rod that has a different composition than the rod. Thus, Hicks teaches away from this feature.

Additionally, Examiner's analogy of "Sue and Sam traveled in different cars" to the feature "the coating and the core structure have different dopant compositions" is simply NOT on point. It is unclear how the analogy applies to the present analysis. Regardless, Hicks NEVER discloses "the coating and the core structure have different dopant compositions."

In the Response to Appellant's arguments, Examiner stated: "Applicant argues that Hicks suggests that the entire core has a common composition. This may be true, but there is nothing which indicates that the coating also has that common composition." But following processing to form the final fiber, there is presumably no further migration under the processing conditions of Hicks to result in the "relatively sharp **step**" following consolidation. Therefore, the implication is that the coating becomes part of the core upon further processing. Regardless, Appellant maintains and emphasizes that Hicks fails to disclose different dopant compositions for the coating and the core structure, while implying that they should be the same. In evaluating references, the standard is not what *could* be the case but what the reference *actually* discloses. For example, it does not matter that Hicks *could* disclose different compositions for the coating and the core or that the coating and the core *could* be attributed with or *could* be manipulated to

present different compositions. What matters is what Hicks *actually* discloses, and Hicks does not disclose or suggest that the core and the coating have different compositions, and Hicks implies that they should be the same.

In the Advisory Action of April 18, 2008, the Examiner stated the following.

> "Re the prior art rejection: It is argued that Hick implies the composition of the rod and the coating are the same - then applicant concludes that this teaches away from the claimed invention. Examiner disagrees; it appears that applicant misreads the claim. Claim 20 refers to "dopant" compositions; the claim is silent as the overall glass composition. As pointed out in the final rejection, the claim reads on having a first dopant in the core and a second (different) dopant in the coating: the claim is completely silent as to whether the second dopant can be in the core and/or whether the first dopant can be in the coating. As set forth on page 3 in the final rejection: the term "composition" can be interpreted as covering "ingredient" (i.e. a dopant)."

With all due respect, Appellant struggles to understand this argument. As would be interpreted by a person of ordinary skill in the art the differences in dopant composition referred to in the last wherein clause of claim 20 is referring to the overall dopant composition in the coating and the core, which can be different based on amounts or elements of the dopant. The core could be undoped silica glass, or the core can be a glass with a dopant that is different in amount and/or type relative to the coating. The claim simply does not state or imply that there is a dopant in the coating that is different from another dopant in the core, and no person of ordinary skill in the art would read the claim in that way.

On page 4 of the final rejection, the Examiner states that the "office finds that the term 'dopant composition' encompasses individual dopants." With all due respect, since no person of ordinary skill in the art would read the claim with this construction, the Examiner's construction of this expression is clearly unreasonable and makes no sense. Under the Examiner's construction of the claim, if the coating and core had identical dopant compositions comprising two dopants, such as aluminum and manganese, at the same concentrations, the core and coating

would have "different dopant compositions" under the claim because the core has aluminum and the coating has manganese. It is unimaginable that a person of ordinary skill in the art would read the claim that way.

With respect to the claimed density range, this is clearly not a density range taught or suggested by Hicks. At column 4, lines 12-18, Hicks described machining the "unconsolidated" material. A person of ordinary skill in the art would expect the CVD deposition of Hicks to be relatively dense at deposition. But a coating with the claimed densities would be too fragile for machining. Thus, Hicks teaches away from the claimed density range. In contrast, Kobayashi teaches pointing the laser at the substrate for deposition, which would necessarily result in an essentially dense coating at deposition due to the high temperatures, 1,600-1800 C. Berkey does not teach anything suggesting a density range. The Berkey apparatus seems to provide considerable flexibility in temperature by adjusting the burners. At column 3, lines 16-27, the turning off of some burners is described to avoid "inordinately" high temperatures. While Miller seems to contemplate materials which can be powder like, nothing in Miller would suggest a particular density for the context of the Hicks process. Thus, the combined teachings of the references do not teach or suggest the claimed density range for coatings that a used for an insert.

Group 3 Claim 39

Claim 39 further specifies that the coating is performed in a flowing reactor with the insert placed within a product stream of the reactor. The Examiner has not established a *prima facie* showing with respect to the ability of the deposition methods of the cited references to deposit a coating with the properties specified in claim 20.

Group 4 Claim 41

Claim 41 has a lower cut off in the value of the density of the coating. The Examiner's assertions are deficient with even greater force for this range of densities.

Summary

Since the references alone or combined fail to disclose all the features of the claimed invention, the references fail to *prima facie* render obvious claims 20, 25, 26, 39, 41, and 44-48. Accordingly, claims 20, 25, 26, 39, 41, and 44-48 are allowable over Hicks in view of Miller, Berkey, and Kobayashi.

B. The Examiner rejected claims 31-38, 43 and 48 under 35 U.S.C. § 103(a) as being unpatentable over Hicks in view of Miller, Berkey, Kobayashi and Bi. The Examiner cited Bi for teaching the Bi pyrolysis. See, the Office Action of October 4, 2007 at page 8. Appellant maintains that the combined teachings of the cited references do not render Appellant's claimed invention *prima facie* obvious. This rejection involves claims of Groups 2 and 5 according to the above noted claim grouping.

Independent claim 31 includes all of the relevant features of independent claim 20 discussed above. The deficiencies of Hicks, Miller, Berkey and Kobayashi are discussed in detail above with respect to claim 20, and these deficiencies apply with equal force to claim 31. Bi does not make up for these deficiencies.

Furthermore, with respect to Bi, Appellant has noted earlier that Bi teaches away from forming a coating. In particular, Bi teaches **throughout** the formation of a high quality unfused powder, i.e. particle collection. While Bi collects their powder on a filter, the powder is loosely held so that it can be shaken off for harvesting. The collector described in US 6,270,732 by Bi and coworkers described using air to dislodge particles form the filter for collection. Bi simply does not teach a stable coating suitable for further processing as described in Hicks. Bi and coworkers did develop a coating pyrolysis, which is the subject of WO 02/32588, but this application published on April 25, 2002 such that it is not suitable prior art for the present

application. Since Bi does not teach a suitable coating deposition process, the combined teachings of Hicks, Miller, Berkey, Kobayahi and Bi clearly does not render Applicant's claimed invention *prima facie* obvious.

In summary, the combined teachings of the references do not teach or suggest a light driven process to form a coating on an insert. Furthermore, the combined teachings of the references do not teach a coating for an insert with the claimed density range, an average primary particle size as claimed or a coating and core structure with "different dopant compositions."

Group 5, Claim 43

Claim 43 specifies an even narrower range of densities. The Examiner's assertions fall even farther short in view of this narrower density range.

Summary

Since the references alone or combined fail to disclose all the features of the claimed invention, the references fail to *prima facie* render obvious claims 31-38, 43 and 48 under 35 U.S.C. § 103(a) as being unpatentable over Hicks in view of Miller, Berkey, Kobayashi and Bi.

CONCLUSIONS AND REQUEST FOR RELIEF

Appellant submits that claims 20, 25, 26, 31-39, 41 and 43-48 are in condition for allowance. Thus, Appellant respectfully requests the reversal of the rejections of claims 20, 25, 26, 31-39, 41 and 43-48 and the allowance of claims 20, 25, 26, 31-39, 41 and 43-48.

Respectfully submitted,

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Claims Appendix

1.-19. (Canceled).

20. A method for forming an optical fiber preform, the method comprising inserting an insert within a glass preform structure, the insert comprising a coating over a core structure, wherein the coating on the core structure comprises an oxide composition comprising SiO_2, a rare earth element and a dopant comprising a metal element that is not a rare earth element, the core structure being a glass rod, wherein the coating comprises particles having an average primary particle diameter of no more than about 500 nm, the coating having a fully densified mass density, wherein the coating has an average density that is a factor within the range from about 0.02 to about 0.55 of the fully densified mass density, wherein the coating and the core structure have different dopant compositions.

21. - 24. (Canceled)

25. The method of claim 20 wherein the particles have an average primary particle diameter of no more than about 100 nm.

26. The method of claim 20 wherein the coating is approximately uniformly distributed around the insert.

27. - 30. (Canceled)

31. A method for forming an optical fiber preform, the method comprising:

forming an insert comprising a coating on a glass rod in a flowing reactor by placing the glass rod in a product stream of the flowing reactor, wherein the reaction to form the product stream is driven by a light beam intersecting a reactant stream wherein the light beam is directed along an optical path between a reactant inlet nozzle and the insert with a configuration in which the light beam passes through the reactant stream without striking the glass rod, the coating having a fully densified mass density and

wherein the coating has an average density that is a factor in the range from about 0.02 to about 0.55 of the fully densified mass density; and

inserting the glass rod with the coating within a glass preform structure, and wherein the coating and the glass rod have different dopant compositions.

32. The method of claim 31 wherein the coating comprises particles having an average primary particle diameter less than about a micron.

33. The method of claim 31 wherein the coating comprises particles having an average primary particle diameter of no more than about 500 nm.

34. The method of claim 31 wherein the coating comprises particles having an average primary particle diameter of no more than about 100 nm.

35. The method of claim 31 wherein the coating comprises a rare earth metal.

36. The method of claim 31 wherein the insert is rotated when forming the coating.

37. The method of claim 31 wherein the coating is approximately uniformly distributed around the insert.

38. The method of claim 31 wherein the light beam is generated by a laser.

39. The method of claim 20 further comprising forming the coating on the insert in a flowing reactor by placing the insert in a product stream of the flowing reactor.

40. (Canceled)

41. The method of claim 20 wherein the average density is a factor from about 0.05 to about 0.40 of the fully densified mass density.

42. (Canceled)

43. The method of claim 31 wherein average density is a factor from about 0.05 to about 0.40 of the fully densified mass density.

44. The method of claim 39 wherein the flowing reactor comprises a radiation beam intersecting a reactant stream at a reaction zone at which the product stream is generated.

45. The method of claim 39 wherein the insert is rotated when forming the coating.

46. The method of claim 39 wherein the flowing reactor comprises a reaction chamber and wherein the insert is within the reaction chamber when the insert is placed in the product stream.

47. The method of claim 39 wherein the flowing reactor comprises a reaction chamber and wherein the insert is external to the reaction chamber when the insert is placed in the product stream.

48. The method of claim 44 wherein the radiation beam is generated by a laser.

EVIDENCE APPENDIX

All of the references in the Evidence Appendix are of record as evidenced by their citation in the Examiner's rejections.

A. U.S. Patent 4,749,396 to Hicks Jr.

EVIDENCE APPENDIX

B. U.S. Patent 4,501,602 to Miller et al.

EVIDENCE APPENDIX

C. U.S. Patent 4,684,384 to Berkey

EVIDENCE APPENDIX

D. U.S. Patent 3,957,474 to Kobayashi et al.

EVIDENCE APPENDIX

E. U.S. Patent 5,958,348 to Bi et al.

RELATED APPEAL APPENDIX

There are no related appeals.